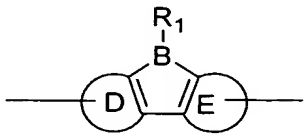
CLAIMS

1. A polymer characterized by comprising a repeating unit represented by the following formula (1) and having a number average molecular weight, in terms of polystyrene, of 10^3 to 10^8:



(1)

wherein R_1 represents a hydrogen atom, or an alkyl, alkoxy, alkylthio, aryl, aryloxy, arylthio, arylalkyl, arylalkoxy, arylalkylthio, arylalkenyl, arylalkynyl, amino, substituted amino, silyl, substituted silyl, silyloxy, substituted silyloxy or monovalent heterocyclic group, or a halogen atom; and rings D and E each independently represent an optionally substituted aromatic ring.

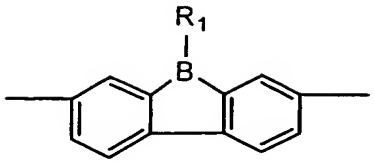
2. The polymer according to claim 1, wherein the aromatic ring is an aromatic hydrocarbon ring or a heteroaromatic ring.

3. The polymer according to claim 2, wherein the aromatic ring is an aromatic hydrocarbon ring.

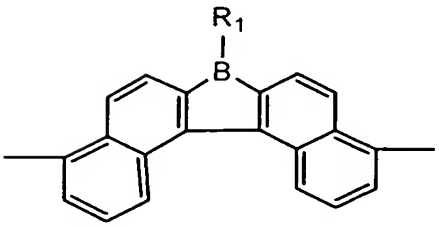
4. The polymer according to claim 2 or 3, wherein the aromatic hydrocarbon ring is a benzene, naphthalene or anthracene ring.

5. The polymer according to claim 4, wherein the repeating unit represented by the formula (1) is represented by the following formula (2-1), (2-2), (2-

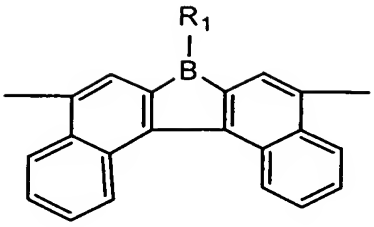
3), (2-4) or (2-5):



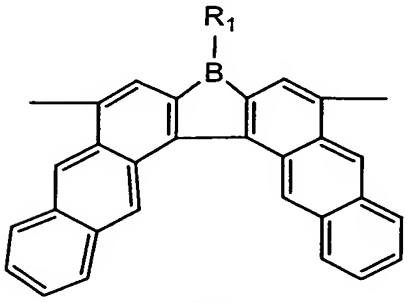
(2-1)



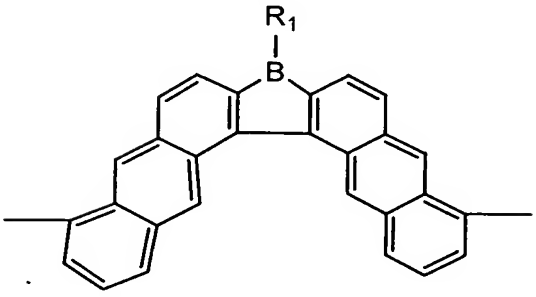
(2-2)



(2-3)



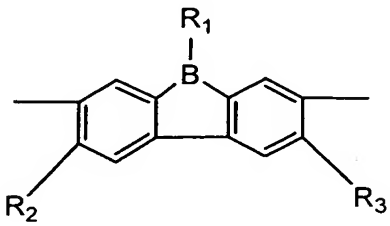
(2-4)



(2-5)

wherein R_1 represents the same group as that in the formula (1).

6. The polymer according to any one of claims 1 to 5, wherein the repeating unit is represented by the following formula (3):



(3)

wherein R_1 represents the same group as that in the formula (1); R_2 and R_3 each independently represent an alkyl, alkoxy, alkylthio, aryloxy, arylthio, arylalkyl, arylalkoxy, arylalkylthio, amino or substituted amino group.

7. The polymer according to any one of claims 1 to 6, further comprising a repeating unit represented by the following formula (4), (5), (6) or (7):

$$-Ar_1- \quad (4)$$

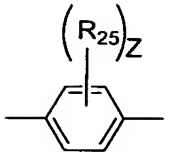
$$-Ar_1-X_1-(Ar_2-X_2)_w-Ar_3- \quad (5)$$

$$-Ar_1-X_2- \quad (6)$$

$$-X_2- \quad (7)$$

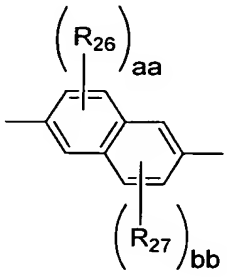
wherein Ar_1, Ar_2 and Ar_3 each independently represent an arylene group, a divalent heterocyclic group or a divalent group having a metal complex structure; X_1 represents $-C\equiv C-$, $-N(R_{22})-$ or $-(SiR_{23}R_{24})_y-$; X_2 represents $-CR_{20}=CR_{21}-$, $-C\equiv C-$, $-N(R_{22})-$ or $-(SiR_{23}R_{24})_y-$; R_{20} and R_{21} each independently represent a hydrogen atom, or an alkyl, aryl, monovalent heterocyclic, carboxyl, substituted carboxyl or cyano group; R_{22}, R_{23} and R_{24} each independently represent a hydrogen atom, or an alkyl, aryl, monovalent heterocyclic or arylalkyl group; w represents an integer of 0 to 1; and y represents an integer of 1 to 12.

8. The polymer according to claim 7, wherein the repeating unit represented by the formula (4) is represented by the following formula (8), (9), (10), (11), (12) or (13):



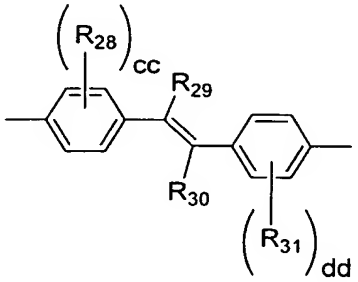
(8)

wherein R_{25} represents an alkyl, alkoxy, alkylthio, aryl, aryloxy, arylthio, arylalkyl, arylalkoxy, arylalkylthio, arylalkenyl, arylalkynyl, amino, substituted amino, silyl, substituted silyl, silyloxy or substituted silyloxy group, or a halogen atom, or an acyl, acyloxy, imino, amide, imide, monovalent heterocyclic, carboxyl, substituted carboxyl or cyano group; and z represents an integer of 0 to 4;



(9)

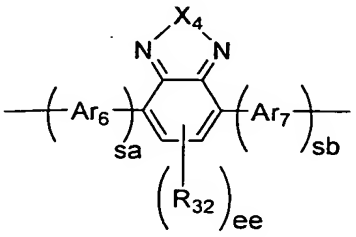
wherein R_{26} and R_{27} each independently represent the same group as the R_{25} in the formula (8); and aa and bb each independently represent an integer of 0 to 3;



(10)

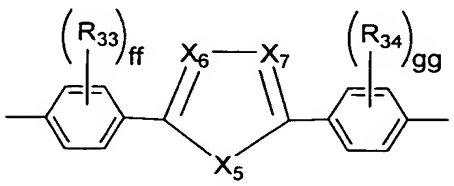
wherein R_{28} and R_{31} each independently represent the same

group as the R_{25} in the formula (8); cc and dd each independently represent an integer of 0 to 4; and R_{29} and R_{30} each independently represent a hydrogen atom, or an alkyl, aryl, monovalent heterocyclic, carboxyl, substituted carboxyl or cyano group;



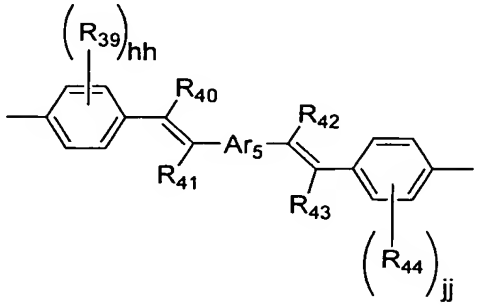
(11)

wherein R_{32} represents an alkyl, alkoxy, alkylthio, aryl, aryloxy, arylthio, arylalkyl, arylalkoxy, arylalkylthio, arylalkenyl, arylalkynyl, amino, substituted amino, silyl or substituted silyl group, or a halogen atom, or an acyl, acyloxy, imino, amide, imide, monovalent heterocyclic, carboxyl, substituted carboxyl or cyano group; ee represents an integer of 0 to 2; Ar_6 and Ar_7 each independently represent an arylene group, a divalent heterocyclic group or a divalent group having a metal complex structure; sa and sb each independently represent 0 or 1; and X_4 represents O, S, SO, SO_2, Se or Te;



(12)

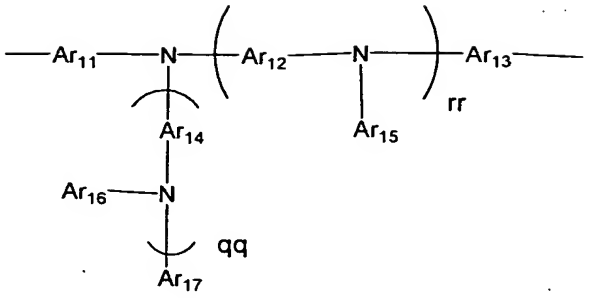
wherein R_{33} and R_{34} each independently represent the same group as the R_{25} in the formula (8); ff and gg each independently represent an integer of 0 to 4; X_5 represents O, S, SO, SO_2, Se, Te, N-R_{35} or $SiR_{36}R_{37}$; X_6 and X_7 each independently represent N or C-R_{38}; and R_{35}, R_{36}, R_{37} and R_{38} each independently represent a hydrogen atom, or an alkyl, aryl, arylalkyl or monovalent heterocyclic group; and



(13)

wherein R_{39} and R_{44} each independently represent the same group as the R_{25} in the formula (8); hh and jj each independently represent an integer of 0 to 4; R_{40}, R_{41}, R_{42} and R_{43} each independently represent the same group as the R_{29} in the formula (10); and Ar_5 represents an arylene group, a divalent heterocyclic group or a divalent group having a metal complex structure.

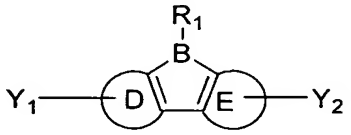
9. The polymer according to claim 7, wherein the repeating unit represented by the formula (5) is represented by the following formula (14):



(14)

wherein Ar_{11}, Ar_{12}, Ar_{13} and Ar_{14} each independently represent an arylene or divalent heterocyclic group; Ar_{15}, Ar_{16} and Ar_{17} each independently represent an aryl or monovalent heterocyclic group; and qq and rr each independently represent 0 or 1, wherein $0 \leq qq + rr \leq 1$.

10. A method for producing the polymer according to any one of claims 1 to 9, comprising subjecting a compound represented by the following formula (15), as one of its raw materials, to condensation polymerization:



(15)

wherein rings D, E and R_1 each independently represent the same as described above; Y_1 and Y_2 each independently represent a substituent that takes part in the condensation polymerization.

11. A method for producing the polymer according to any one of claims 7 to 9, comprising subjecting not only the compound represented by the formula (15) but

also a compound represented by any one of the following formula (16) to (19) to condensation polymerization:

$$Y_3\text{-}Ar_1\text{-}Y_4 \qquad (16)$$

$$Y_3\text{-}Ar_1\text{-}X_1\text{-}(Ar_2\text{-}X_2)_w\text{-}Ar_3\text{-}Y_4 \qquad (17)$$

$$Y_3\text{-}Ar_1\text{-}X_2\text{-}Y_4 \qquad (18)$$

$$Y_3\text{-}\ X_2\text{-}Y_4 \qquad (19)$$

wherein Ar_1, Ar_2, Ar_3, w, X_1 and X_2 each represent the same as described above; and Y_3 and Y_4 each independently represent a substituent that takes part in the condensation polymerization.

12. The method according to claim 10 or 11, wherein Y_1, Y_2, Y_3 and Y_4 each independently represent a halogen atom, or an alkylsulfonate, arylsulfonate or arylalkylsulfonate group and the condensation polymerization is carried out using a zerovalent nickel complex.

13. The method according to claim 10 or 11, wherein Y_1, Y_2, Y_3 and Y_4 each independently represent a halogen atom, or an alkylsulfonate, arylsulfonate, arylalkylsulfonate, boric acid or borate ester group, the ratio of the total mole number of the halogen atom and the alkylsulfonate, arylsulfonate and arylalkylsulfonate groups to that of the boric acid and borate ester groups is substantially 1, and the condensation polymerization is carried out using a nickel or palladium catalyst.

14. A composition, characterized by comprising: at least one material compound selected from the group

consisting of a hole transport material, an electron transport material and a light-emitting material; and at least one polymer according to any one of claims 1 to 9.

15. An ink composition, characterized by comprising the polymer according to any one of claims 1 to 9.

16. The ink composition according to claim 15, having a viscosity of 1 to 20 mPa·s at 25°C.

17. A light-emitting thin film, comprising the polymer according to any one of claims 1 to 9.

18. A conductive thin film, comprising the polymer according to any one of claims 1 to 9.

19. An organic semiconductor thin film, comprising the polymer according to any one of claims 1 to 9.

20. A polymeric light-emitting device, characterized by comprising a layer that comprises the polymer according to any one of claims 1 to 9 between an anode and a cathode.

21. The polymeric light-emitting device according to claim 20, wherein the layer that comprises the polymer according to any one of claims 1 to 9 is a light-emitting layer.

22. The polymeric light-emitting device according to claim 21, wherein the light-emitting layer further comprises a hole transport material, an electron transport material or a light-emitting material.

23. A surface light source, characterized by using the polymeric light-emitting device according to any one of claims 20 to 22.

24. A segment display unit, characterized by using the polymeric light-emitting device according to any one of claims 20 to 22.

25. A dot matrix display unit, characterized by using the polymeric light-emitting device according to any one of claims 20 to 22.

26. A liquid crystal display unit, characterized by using the polymeric light-emitting device according to any one of claims 20 to 22 as its back light.